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**An Introduction to Genetic Analysis (6th edn).** Anthony J.F. Griffiths, Jeffrey H. Miller, David T. Suzuki, Richard C. Lewontin and William M. Gelbart. W. H. Freeman and Company, New York. 1996. Pp. 915. Price £27.95, hardback. ISBN 0 7167 2604 1.

Undergraduate genetics courses, and textbooks, come in two varieties: those which begin with Mendel and move on to molecules, and those which start with the structure of DNA and leave more abstract notions of genes until later. *An Introduction to Genetic Analysis* is clearly in the former category, aiming for a balanced approach between classical and molecular genetics but teaching the subject in a more-or-less historical sequence. Ultimately, however, the success or otherwise of a course (or textbook) depends less on the order of topics than on how well it is taught. I can report that Griffiths *et al.* teach genetics very well indeed.

This sixth edition retains all the features that have made it such a popular text with students and tutors. The stated aim of the authors is to explain genetics primarily in terms of the analytical approaches available. In this it succeeds superbly. The text is clear and easy to read with many examples illustrating key experiments and major points. To aid comprehension, key concepts are listed at the beginning of each chapter, highlighted as 'boxed messages' embedded in the text, and summarized at the ends of chapters. A particular strength is the inclusion of a large number of problems at the end of each chapter, many new for this edition, including 'chapter integration' and 'concept map' problems to aid revision and keep educationalists happy. Example problems are present and, new for this edition, 'unpacking the problem' exercises give hints for finding solutions. An annoying feature is the three-to-one ratio of unanswered to answered problems — and why is it always the tricky ones which don't have an answer in the back? The solutions exist, of course, but it is necessary to purchase a separate study guide to obtain them all, which will not be appreciated by puzzled students on tight budgets.

What else is new in this sixth edition? Presentation has been improved by the extended use of colour and subtle typographical and layout changes (tables are now highlighted in pastel shades) and the addition of many good

new photographs. Updating of content has occurred throughout the book, but the major changes are concentrated, unsurprisingly, in those chapters dealing with fast-moving molecular genetic topics. The biggest improvements are in the molecular techniques chapters. These have been rewritten so that the logic of gene cloning strategies is now clearly apparent, including cloning by tagging, functional complementation and positional cloning as well as oligo design and ORF analysis. Reverse genetics, gene replacements and gene therapy are newly included and particularly welcome is an entirely new chapter on 'Genomics' describing strategies for mapping and sequencing whole genomes. The result of these changes is that the major techniques of modern molecular genetics are now very clearly outlined prior to discussion of more specific topics in the following chapters. In these subsequent chapters, developmental genetics has expanded with a new chapter on cell biology including such topics as cell cycle genes, the cytoskeleton, intercellular communication and the genetics of cancer. The genetics of pattern formation during development is now illustrated using *Drosophila* examples throughout, giving a more coherent treatment to this subject.

Several teaching aids complement the textbook. In addition to the study guide and a selection of illustrations on overhead transparencies, there is now also a CD-ROM available containing all the illustrations from the book, and an instructors' manual. These aids are available for purchase, although recognized tutors recommending the text may be able to obtain some of them free if their class size is sufficiently large (no problem then for teachers in UK universities).

It may not hold all the answers, but *An Introduction to Genetic Analysis* is an excellent text for undergraduate genetics teaching.

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**Essential Genetics.** Daniel L. Hartl. Jones and Bartlett, Massachusetts. 1996. Pp. 458. Price £17.95, paperback. ISBN 0 86720 883 X. **Genetics (3rd edn).** Daniel L. Hartl. Jones and Bartlett, Massachusetts. 1994. Pp. 584. Price £19.95, paperback. ISBN 0 86720 870 8.

The dedication in the 1994 third edition of the excellent textbook *Genetics* by Hartl is 'This is Christopher's book'. The dedication in the 1996 *Essential Genetics* is 'This too is Christopher's book'. The puzzle that I set about trying to solve is 'Why would Christopher want a copy of *Essential Genetics* if he already has a copy of *Genetics*?' In content the two books are very similar. But *Genetics* is a bit longer and has chapters on 'Extranuclear Inheritance',

'Somatic Cell Genetics and Immunogenetics', and 'Genes and Behaviour' that are absent in *Essential Genetics*. Separate chapters on 'Genes and Chromosomes' and 'The Molecular Organization of Chromosomes' in *Genetics* are reduced and combined in a single chapter on 'The Chromosomal Basis of Heredity' in *Essential Genetics*. The order of chapters and some sections are switched around and *Genetics* has some other extra chunks and words here and there. Otherwise the text, pictures and diagrams are identical. Thus the somewhat reduced but otherwise identical *Essential Genetics* seems at first a step backwards, a retrograde 'fourth edition' of *Genetics*. What is going on?

The preface of *Genetics* says that its aim is to provide a clear, comprehensive, and rigorous introduction to the principles of genetics at the college level. This aim is achieved. The preface of *Essential Genetics* states that it is designed to meet the needs of the shorter, less comprehensive introductory course in genetics. But shorter than what? Shorter perhaps than a course whose needs are met by *Genetics*? We do not find out, as *Essential Genetics* makes no reference to its predecessor. An answer to the puzzle lies in the format which differs completely between the two books. In *Genetics*, Hartl provides the normal kind of textbook most of us are used to. For example it has section headings such as, 'Random Genetic Drift', 'Restriction Fragment Length Polymorphisms', 'Redundancy and Wobble', but in *Essential Genetics* these become, 'Some Changes in Allele Frequency are Random', 'Polymorphisms in the Size of DNA Restriction Fragments are Widespread', 'Much of the Code's Redundancy Comes from Wobble in Codon-Anticodon Pairing'. Moreover, *Essential Genetics* is bristling with learning objectives — themes and main points, with lists and bullets, topical reviews, summaries, keywords, glossary, problems and answers, pitfalls, guide terms and so on. Do any of these things ring a bell with UK readers experiencing Teaching Quality Assessment fever? I think Hartl has been on a course and I really don't know if I want to go on it too. I surely cannot recommend both these books to students. I would advise Christopher to concentrate on *Genetics* even if he gets a copy of *Essential Genetics* free like me.

At Swansea we recommend *An Introduction to Genetic Analysis* by Griffiths *et al.* (W. H. Freeman and Company) (see review above of the 6th edn) to intending genetics honours students as a general textbook for the first and second years. In many respects this is too advanced for first year students yet often not detailed enough for second year students. *An Introduction to Genetic Analysis* has 300 pages more than Hartl's *Genetics* and of course covers more, particularly on classical genetics and chromosomes and molecular genetics. But *Genetics* has high diversity in relation to its length, and has for example a chapter on behavioural genetics lacking from *An Introduction to Genetic Analysis*. I found the narrative of *Genetics* rather more gripping and clear than in *An Introduction to Genetic Analysis* where the style is variable and can be dull in parts. Thus I would be most happy to recommend

*Genetics* to first year biology students as a more easily digestible and perhaps more stimulating alternative to *An Introduction to Genetic Analysis*.

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**Cell Cycle—Materials and Methods.** Michele Pagano (ed.) Springer-Verlag, Berlin. 1995. Pp. 285. Price DM 128.00, paperback. ISBN 3 540 58066 2.

The druid Panoramix [Getafix (GB) or Miraculix (D)] presents the cartoon hero, Asterix, with a magic potion that gives him limitless confidence and the might to tackle a thousand tasks. The brews in this creole cookbook from Mitotix and expert friends are certainly encouraging as well as exotic (chapter 18's excellent recipe for MPF with CAK starts: 'cut the five arms of the starfish with large scissors and open it... macerate the ovaries and filter through fine cheese-cloth'). The historical synopsis and glossary of cell cycle regulators that opens the book records the material culture of the biochemists, molecular geneticists, and cell biologists who have chased the molecules regulating cell proliferation from species to species since 1987, when the human *cdc2* gene was shown to function in fission yeast. The book is a set of guidelines for the exploration of the interdisciplinary approach, skirting whole research communities with their own teeming cultures of operating procedures. The clams and sea urchins that started the cyclin revolution are not on the menu. Nor is there any treatment of genetic techniques for *Saccharomyces* and *Drosophila*, species that (as is admitted on p.104) have been key in dissecting cell cycle control. Other areas are included, such as structure-function bioinformatics and apoptosis, only to be left behind in a flood of recent publications.

If not for historians, then for whom is the book written? The two excellent opening chapters set the tone: Bartkova and her co-authors aim to provide reagents and techniques with which the research pathologist can make an objective evaluation of cell proliferation in a variety of disease states. This advice on adapting standard histochemical procedures to detect oscillating and labile peptides comes from the top practitioners with careful consideration of practical difficulties and essential controls. In Chapter 2, Cardoso and Leonhardt take equal pains to ensure that immunofluorescence techniques are thoughtfully examined and reproducibly applied, down to the details of the mounting medium. Sadly, this level of attention to detail and critical evaluation of the pitfalls of each method are only sporadically attained throughout the book. The chapters by Dutta and Winchester and by Clarke on SV40 replication and *Xenopus* extracts are extremely good and Chapter 6 is a good place to start